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BRAILLE RESOURCES FOR THE DEAF-
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AND WHAT THEY COULD BECOME.

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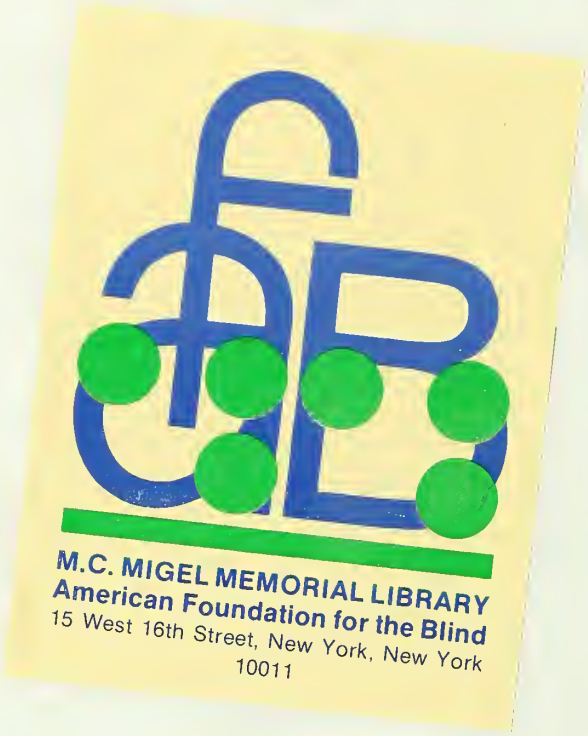
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BRAILLE RESOURCES FOR THE DEAF-BLIND PERSON

WHAT THEY ARE

AND

WHAT THEY COULD BECOME

Presented

by

Frank Kurt Cylke
Chief
Division for the Blind and Physically Handicapped
Library of Congress

To

Helen Keller
World Conference on Services to Deaf-Blind Youths and Adults

September 13, 1977

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Introduction

In addressing the topic "Braille Resources for the Deaf-Blind Person: What They Are and What They Could Become" one could logically detail current and past braille production methods. One could also identify existing braille libraries and project future possibilities in terms of their size and the availability of holdings to the deaf-blind user community. Pursuing this a bit further, it would not be unreasonable to chronicle the historical development of braille and, as Robert B. Irwin put it, "The War of the Dots."[1]

I have elected not to take this approach! Rather, I will assume your knowledge of braille and but briefly note current production techniques. I will then concentrate upon what appears to me to be the very promising application of twentieth century computer technology to the creation of braille -- to the direct benefit of deaf-blind children and adults.

Current Production

Braille in the United States is the "official" system of embossed writing for blind persons. All producers of "press" and "handcopy" braille follow Library of Congress standards and, for the most part, are certified by the Division for the Blind and Physically Handicapped, Library of Congress.[2]

"Press" braille publishers, in the U.S. and in other countries, input in various ways. In some cases they also have varying output products; solid dots in England, for example. However, all produce materials consistent with existing national standards. "Today (braille) is world embracing, for it has been adapted to the needs of Oriental and Slavonic languages, African dialects and the complexities of the Chinese ideogram."[3]

One consistent problem, however, is the lack of cost effectiveness. For example, in the United States the largest

production run of braille books approaches 90 copies. The largest production run of braille periodicals approaches 2,500 copies.

Excepting Great Britain, all other braille production figures are significantly lower.

These output figures do not permit cost efficient production. As a result, few commercially-produced print monographs, periodicals, and serials are issued for blind and deaf-blind readers. I suggest that using current production techniques few titles ever will be produced.

If costs approximate $1.5 million in the United States to produce but three hundred and fifty titles and twenty periodicals what hope is there for the production of a greater number? Frankly, utilizing current methods, there is little hope of expanding the world production of braille to meet needs.

What, then, is to be done? How can publishers ensure that deaf-blind individuals have access to materials required for daily living -- and for recreation -- in a quantity that will satisfy existing and projected needs.

As previously noted, I believe needs may be met by adopting emerging computer-related technological advances to braille requirements and by accepting the concept of "on demand" production.

"Until very recently methods of producing Braille were simple: it was a matter of transcribing a single copy of a work. Either a slate or the typewriter with six keys was used. If it was a matter of printing a number of copies of a text a stereotype plate of zinc or aluminum which was embossed onto special machines called stereotypers was used. The stereotype plates, fixed on a press, embossed the paper. In both cases the transcriber or printer

had to know Braille.

"Do new techniques allow the possibility of transcribing or printing Braille by people who don't know this writing? The transformation of ordinary writing into Braille is a problem of information processing, hence in the domain of the computer. If it is a matter of simply converting writing into Braille one hardly needs a computer. On the other hand, it is an entirely different story if we are dealing with contracted Braille. In several countries, notably Denmark and France, (Germany and the United States) research has been undertaken in this direction. It has resulted in obtaining from the computer a punched or magnetic tape, coded in contracted Braille.

"One could raise another problem: how (does one) enter the printed text into the computer? The standard solution is to use a keypuncher which produces cards or tapes in the code of

the computer. Some have thought that it will be possible to use punched or magnetic tape prepared for other uses. Others, seeing even farther into the future, hope for the day when Braille production facilities will have access to the large computers of libraries."[4]

Technological Applications

Braille is a marvelous invention but it presents an inconvenience -- the bulk, and related costs, of materials. To convince oneself of this one need only think of the Braille Library of the Association Valentin HAUY which has twelve rooms of more than 100 square metres for the storage of some 200,000 braille volumes, representing around 30,000 works. One can also think of the U.S. Library of Congress system in which 50,000 works are represented in approximately 4,000,000 braille volumes with significant storage requirements.

The continuing question is "How, in the current age, is it possible to reduce volume -- and related costs -- considerably?"

The solution is to store a text coded in braille on a magnetic tape so compact that one track can store a work which normally takes up five braille interpoint volumes.

The storage is relatively easy! It is not so easy to present braille in a form the deaf-blind can read.

Two organizations are currently addressing this problem. The Association Valentin HAUY -- in France -- following two years' work in cooperation with the ELINFA Society -- in the persons of Oleg and Andrée Tretiakoff -- developed a device which presents braille in relief on a line of twelve characters.

Dr. Weiner Boldt, Professor, Dartmund University, Germany, has also developed, and is now refining, a device which computerizes

braille and offers a simple reading mechanism. It is called BRAILLEX.

I suggest that either the Association Valentin HAUY (ELINFA) device, the Boldt (BRAILLEX) device, or a modification of these, is the way of the future in addressing the braille needs of deaf-blind individuals.

Specific Devices

I will now briefly describe both the ELINFA and BRAILLEX devices prior to generalizing on future possibilities.

ELINFA

The ELINFA device is portable (8x9x2 inches) and weighs approximately 4 pounds. It operates for two hours on rechargable batteries. The machine has a braille keyboard with six keys, similar to the Perkins Brailler keyboard. As a person hits the keys, the braille cells appear on the raised band from right to

left. A backspace capability allows the correction of errors. When the memory bank of the machine is full, it is possible to reread its contents before transferring it to cassette. Conversely, the text stored in the cassette is transferred, block by block, into the memory bank and displays, line after line, on the band.

The machine permits the user to take notes and to reread that which is registered on the cassette.

An attachment allows the liaison between the memory of the "Digicassette-Braille" and a computer, a teletype machine, a typewriter, a calculator, or any other type of machine emitting standard coded signals. The blind can, with this machine, communicate with a computer. Moreover, a text stored in a computer can be transferred into the memory bank and the cassette of the ELINFA machine.

BRAILLEX

Dr. Boldt's system also offers quick and easy access to sequenced information. The BRAILLEX comprises an electronically controlled high-speed cassette deck, a braille display of 32 characters, an electronic braille keyboard, and the central electronic assembly of the advanced mircoprocessor type that is installed on printed circuit boards for easy maintenance. The size is comparable to ELINFA.

BRAILLEX has four basic functions: dictionary, file, index, and reading.

Dictionary: Programmed cassettes are placed into the cassette holder. The user operates the braille keyboard by inserting the selected code word. The latter appears on the braille display for rechecking. After pressing the "Search" key, the information related to the code word is recalled

electronically from the cassette within an average access time of 30 seconds and is then presented in braille and/or spoken language.

Tape resetting after use is not required if the program is stored in alphabetic or numeric order. For the next operation the system decides whether the code word can be found by quick forward or return winding. Fragments of words or basic terms can be called up and assure exact output.

File: Any information in connection with a braille code word can be stored acoustically and/or in braille on the tape. The braille keyboard is used for the input of the code word as well as for braille-stored information. For this function, too, the input is performed on the braille display for checking purposes.

Unsequenced blocks of information can be called at any time. BRAILLEX offers the possibility of obtaining a selective readout of all information that is stored in connection with the same code word.

Index: BRAILLEX permits searching for specific pages, chapters or subjects according to the user's interest. During auditory presentation search codes or indices in braille are recorded digitally on the tape within a very small unit of time. Rapid access is achieved.

This technical solution for retrieving is basic for effective working with important material.

Reading: BRAILLEX permits reading books from magnetic tape cassettes that have been prepared for tactile reading. After the text has been called up, a text portion corresponding to about one page of braille is transferred to a memory. This

store releases its information continuously to the braille display according to the user's reading speed. For control of the text, the user is free to recall preceding lines or to turn up to forward sections by pushing a contact. Thus, a volume of a medium-sized pocket book can be stored and presented by a C-90 cassette. This possibility, although it doesn't meet the real intention of BRAILLEX, may provide additional opportunities to users, as the basic functions of the system include this as an incidental profit.

Future

What does this all mean? What is the future of braille resources for deaf-blind individuals?

I suggest the future is bright! I suggest the future holds the possibility of many more volumes than currently available, prepared on both a "press" and "on-demand" basis.

I suggest the future holds a reading world for the deaf-blind that will approximate that available to the sighted.

Future Details

What the future holds is an instrument that will accept both individual input and "press" input. The future holds a small, light, silent, braille input/output device that permits:

1) operation through manual keyboard or external devices;
2) portability;
3) instant display of all braille signs and numbers;
4) sound and braille playback alternatively on the same tape, or at least in the same machine;
5) battery operation.

In short, the future holds a low cost personal braille device: that will permit commercial producers to create tapes

that may be duplicated on request; that will permit volunteers to produce tapes that may be duplicated on request; and that will be owned by all deaf-blind individuals for reading of important items and for the creation of personal communications. The current cost of approximately $2,000 for each experimental unit will be reduced as a result of volume purchase by government, agency, and volunteer purchase.

Conclusion

I trust these brief highlights of emerging technology will encourage those of you involved in work with deaf-blind children and adults.

Footnotes

[1]Irwin, Robert B. As I Saw It. American Foundation for the Blind, New York, 1955. 205 pp.

[2]Birns, Shayne. "Review of Literature on Braille Reading." The New Outlook for the Blind, November 1977, Vol. 70, No. 2.

[3]Roblin, Jean. Louis Braille. Royal National Institute for the Blind, London, England, 1953. p. 46.

[4]Schneider-Maunoury, Pierre. Le Louis Braille. Paris, France, November-December 1976.

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